

UNIFORM MOTION PROBLEMS

- Two trains start from the same station and run in opposite directions. One runs at an average rate of 40 miles per hour, and the other at 65 miles per hour. In how many hours will they be 315 miles apart?

First Train	Starting point	Second train
40 mph x hours distance = rate x time		65 mph x hours distance = rate x time
$d = 40x$		$d = 65x$
$40x + 65x = 315 \text{ miles}$		

Or you may like to set up a table like this:

Train	Time	Rate	Distance
First	X	40	40x
Second	X	65	65x

Then Complete. $40x + 65x = 315$

- Two automobiles start from the same place and travel in opposite directions, one averaging 45 miles per hour and the other 30 miles per hour. In how many hours will they be 900 miles apart?
- Two men, A and B, start toward each other at the same time from points 510 miles apart. If they travel 40 and 45 miles an hour respectively, in how many hours will they meet?
- Jones and Brown start from two points, which are 375 miles apart and travel toward each other. The latter travels twice as fast as the former. They meet in 5 hours. Find the rates per hour.
- A man rides out into the country at a uniform rate of 30 miles per hour. He rests 2 hours and then rides back at 20 miles per hour. He is gone 5 hours. How far did he go?
- A motorboat starts out and travels 9 miles an hour. In 3 hours another motorboat traveling 18 miles an hour starts out to overtake the first one. In how many hours will the second boat overtake the first?

UNIFORM MOTION PROBLEMS (CONTINUED)

7. Mr. Williams starts out in his auto traveling 30 miles per hour. Four hours later Mr. Speedster starts out from the same point at 60 miles per hour to overtake Mr. Williams. In how many hours will he be overtaken?

Hint: Remember that each will have traveled the same distance when they meet. X = Speedster's time.

$$R \times T = D$$

Williams	30	$X + 4$	$30(x - 4)$
Speedster	60	X	$60X$

Therefore, $30(x + 4) = 60x$

8. A freight train is traveling 30 miles per hour. An automobile starts out from the same place 1 hour later and overtakes the train in 3 hours. What was the rate of the automobile?
9. C and D start from two points 480 miles apart and travel toward each other. They meet in 8 hours. If C travels 6 miles per hour faster than D, find their rates.